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SCAPHOPODA OF THE JAMAICAN OLIGOCENE AND COSTA RICAN PLIOCENE.

BY HENRY A. PILSBRY.

Extensive collections of the fossils of the Upper Oligocene beds at Bowden, Jamaica, were made for the Academy some years ago by the late Uselma C. Smith and Mr. Silas L. Schumo. While preparing a monograph on the recent *Scaphopoda* for the *Manual of Conchology*[1] in 1897–8, the writer determined the species of these beds, and prepared the following descriptions and figures. Through oversight they were not published at that time.

Of nine species in our collection from the Bowden bed, two are represented by fragments too incomplete for characterization. Two are identical with forms from the Oligocene of Santo Domingo,[2] but the number of species common to the two beds may be increased when the smaller species are collected in Santo Domingo.

The occurrence of rich Oligocene faunas *of strictly littoral and sublittoral facies* at levels but little above the modern sea level, in both Jamaica and Santo Domingo, indicates emphatically that there was no such general and profound or total submergence of that area during the upper Oligocene as has been assumed by Dr. Schuckert.[3]

It is, moreover, inconceivable to students of the land-snails of the West Indies that the peculiar special faunas of the several islands could have been evolved since the Oligocene.

Dentalium costaricense n. sp. Fig. 3.

D. dentale Gabb, Journ. Acad. Nat. Sci. Phila., n. ser., VIII, p. 369 (in part).
D. costaricense Pilsbry, Manual of Conchology, XVII, p. 254 (name only).

Shell moderately curved, solid, moderately tapering. Surface sculptured with numerous somewhat unequal longitudinal rounded cords, separated by interstices as wide as themselves, with threads in some of the intervals, about 28 cords at the larger end, not counting the interposed threads; towards the smaller end alternate cords become more prominent, especially on the concave side; there are moderate, oblique growth-striæ throughout. Aperture oblique, with thin peristome. Both orifices circular.

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[1] *Manual of Conchology*, vol. XVII.

[2] Scaphopoda of the Santo Domingo Oligocene, *Proc. A. N. S. Phila.* for 1897, pp. 465–476.

[3] *Paleogeography of North America*, plate 97.

Length 25½ mm. (posterior end broken); greatest diam. 3.7 mm.

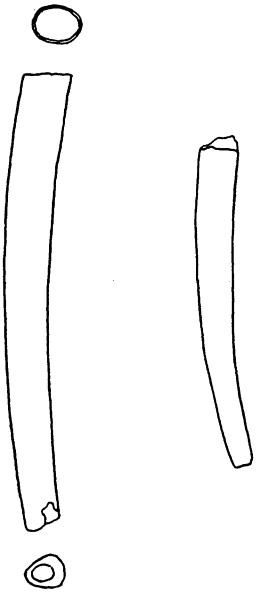
Pliocene(?), Costa Rica, William M. Gabb.

This species was referred to the European *D. dentalis* by Gabb, but it is not closely allied to that species.

Dentalium (Tesseracme) dissimile Guppy.

Proc. Acad. Nat. Sci., 1897, p. 469, pl. XI, figs. 3–5 (January 18, 1898).

A common form in the Bowden bed, and the largest Jamaican species.



Figs. 1, 2.
Dentalium macilentum.

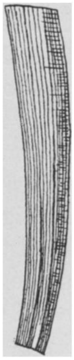


Fig. 3.
D. costaricense.

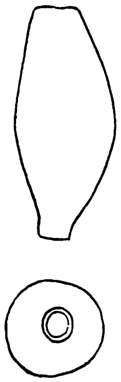


Fig. 4.
Cadulus simrothi.

Dentalium (Episiphon) macilentum n. sp. Figs. 1, 2.

Shell small, moderately curved, *excessively slender*, slightly tapering; surface *smooth*, somewhat glossy, with slight growth-lines only. Tube *very strongly compressed laterally* throughout, wider and thicker along the concave than the convex side. Both apertures oval or oblong. Young stage acicular.

Dimensions of largest (though imperfect) specimen: Length 8.8, antero-posterior diameter at aperture 9.1, at apex 0.7 mm.; lateral diameter at aperture 0.7. at apex 0.6 mm.

Bowden bed.

An abundant form, very strongly compressed laterally, sometimes actually flattened on the sides. The shell-wall along the concave side is decidedly thicker than that opposite along the convex side.

Another *Episiphon,* of very slender form, thin shell and circular section, occurs in the Santo Domingo Oligocene beds. As the material is not very abundant, only one being presumably adult, the species was omitted from my account of the Scaphopods of that deposit. The largest specimen seen has a length of 13 mm. and a greatest diameter of 0.9 mm., and is almost smooth.

Dentalium (Episiphon) schumoi n. sp. Fig. 5.

Shell small, slightly curved, *excessively slender,* the adults but slightly tapering, young shells acicular; rather thin; surface finely striated circularly, becoming on the posterior half strongly annulated *by rather regularly spaced, close grooves, slightly oblique,* and *cutting the surface into narrow segments* much as in *D.* (*Fustiaria*) *circinatum.* Tube *strongly compressed laterally* throughout; apex simple or with a short projecting pipe or tube.

Length 8.2, antero-posterior diameter at aperture 0.78, at apex 0.56 mm.; lateral diam. at aperture 0.6, at apex 0.46 mm. The specimen has evidently lost in length by breakage.

Bowden bed, not uncommon.

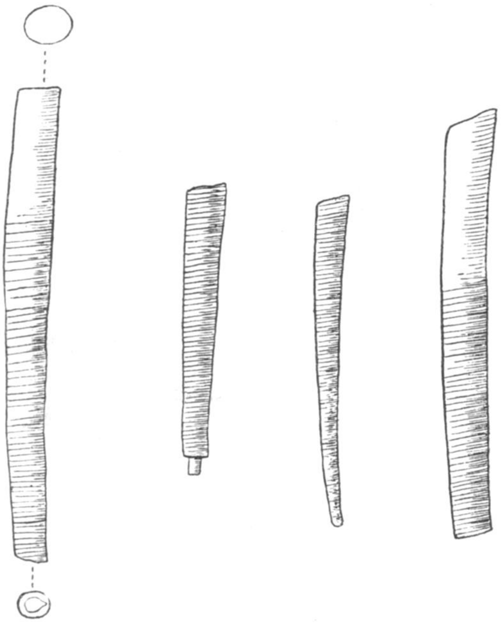


Fig. 5.—*Dentalium schumoi,* specimens of various ages.

Strongly compressed laterally, and readily distinguished by the circular sculpture. It is named in honor of Mr. Silas L. Schumo, who collected the material.

Dentalium (Rhabdus) sp. undet.

Numerous fragments of a slowly tapering species, circular in section, glossy, and very thin throughout, occur in the Bowden beds. The largest measures 3.6 mm. in diameter. The thinness of the entire tube and the circular section of the smaller end readily distinguish the species from *D. dissimile* Guppy, but the fragments at hand are too imperfect for definition of the species.

Cadulus depressicollis Pilsbry and Sharp.

Proc. Acad. N. S. Phila., 1897, p. 473, pl. 11, figs. 25–27.

Characteristic fragments of this species, originally described from Santo Domingo, are found in the Bowden beds.

Cadulus dentalinus (Guppy).

Pilsbry and Sharp, Manual of Conchology, XVII, p. 190, pl. 36, figs. 21, 22.

Bowden beds, abundant. This is the type locality. Specimens received from Mr. Guppy have been figured in my volume on recent Scaphopods, where the relationships of the species are discussed (*l. c.*, pp. 188–190).

Cadulus annulatus n. sp.

Rather a large, slender species of the group of *C. dentalinus*. The swelling is only slight and near the anterior end; tube subcircular in section, a trifle flattened on the convex side at the oblique aperture; sculpture of very fine, close, oblique wrinkles throughout. The length is about 7½ mm., greatest diameter 1 mm.

Bowden, Jamaica.

This species is represented by imperfect specimens only. It may be recognized by the very fine wrinkles and slight swelling.

Cadulus sp. undet.

A *Cadulus*, of the subgenus *Polyschides*, occurs in the Bowden beds, but only fragments are in the collection. There are several species belonging to the same group in the Eocene and Oligocene of the southern United States.

Cadulus simrothi n. sp. Fig. 3.

Shell minute, smooth, slightly arcuate, *biconic, strongly swollen in the middle*, rapidly tapering toward both ends, produced in a short tube posteriorly; greatest diameter contained about 2⅓ times in the length of the shell. Outline of the most convex side irregular, the contours being but slightly convex above and below the "equator," and sometimes a little concave near the posterior orifice; outline of the opposite side similar, but less convex. *Tube circular in section at "equator" and aperture, decidedly oval at posterior or anal orifice,* being compressed on the convex and less so on the concave side. Aperture much larger than the other orifice, oblique, the peristome thin. Anal orifice oval, decidedly wider than long, obstructed by a circular callus within; edges unslit.

Length 2.1 mm.; diameter at aperture 0.37, at greatest swelling 0.9 mm.; antero-posterior diameter at apex 0.27, lateral diameter 0.3 mm.

Bowden, Jamaica.

This is, I believe, the earliest member of the typical group of *Cadulus* yet known. It is not unlike the recent *C. exiguus* Watson, but this species is a little broader, the diameter contained 2⅓ times in the length. In *C. exiguus* the shell is "contracted into a tube at either end." In *C. simrothi* the posterior end only is tubular and the shell is a little larger.